Ch.3

Sexual Response Cycle

Introduction

- all sexually dysfunctional males Carried only one Diagnosis: impotence
- all sexually dysfunctional females Carried only one Diagnosis: Frigidity
- Studies Divided the sexual Response cycle into following 4 phases: [descriptive terms]
  - ↳ Excitation
  - ↳ plateau
  - ↳ Orgasm
  - ↳ Resolution
- [Physiological Terms] consist of 2 Phases:
  - ↳ Congestion phase: that is Responsible for the changes During the excitation and plateau phase.
  - ↳ Contraction phase: occur During orgasm →

(the biphasic Concept of sexual Response)

- another phase added:-
  - ↳ Sexual desire phase :→ (triphasic Concept)

3 Main subjects to Discuss

1- Motivational aspect
2- Physiological aspect
3- Behavioural aspect-

1. Motivational Aspects:-

- 2 levels: Central, Peripheral
- 2 mechanisms:
  - ↳ Hormonal ⇒ ① Androgens ② Prolactin
  - ↳ Neurological ⇒

2 areas → High Cerebral Center, Hypothalamus
2 external factors → Avoidance pain, Attainment of pleasur
2. Internal factors → Excitatory, inhibitory

- Sexual desire (libido) :-

Specific Sensations of which the individual move to initiate or to Receive sexual activity

⊙ manifistations of Sexual desire

Central level (Brain)
- Spontenous Sexual thoughts
- interest in initiating Sexual activity
- emotional state Ready for love, Sex

Peripheral level (Genital organs)
- ↑↑ Contral, peripheral arousability of the genital organs to Sexual stimuli.
  ↓
  may occur in Absconce of external stimuli or During sleep

⊙ Regulation of Sexual desire

① Hormonal control :-

⍟ Role of Androgen:

- The most impoitant Hormone that Responsible for sexual Desire By their action on the Brain Centers :- of Both male, female
- ↑↑ Sexual activity → may lead to ↑↑ Androgen Level in males
- The small amount of Androgen in female Dosn't mean that they have Lower Level of Sexual Desire.
  ↓
  it means that their Sex Centers are more sensitive than males to these small amount of Androgen
- non-Sexual effect of Androgens :- on the Brain;
  - ↳ liability for aggressive Behavior
  - ↳ Competitiveness
  - ↳ Criminal Behaviors

⍟ Role of Prolactin :-

- pathological High levels ⟹ associated ↓↓ Sexual Desire
  Erectile Dysfunction

- High prolactin levels → associated e` mainly :- Loss of Desire
- The Erectile dysfunction in these ptns is Psychogenic D.t Low desire.
- Example :- the improvement of Erection in hyperprolactinemic ptn with Sex Therapy only (without Lowering prolactin Level)

② Neurological Control :

1- The Regulatory area :-

⭐ The High Cerebral Centers

- include the following areas :

① Limbic Structures
- frontal and temporal Lobes
- emotions + memory

② Thalamic nuclei
- somatic sensations

③ Hippocampus Cingulate Gyrus
- olfactory sensation

- all these are Excitatory areas as Regards sexual desire and penile erection

④ Amygdaloid nucleus

This is an inhibitory areas as Regard sexual desire

⭐ The hypothalamus :-

- Its the Regulatory station Concerned e` :-
  - Intergration of the impulses Between the upove Corebral Centers and the Low Spinal Centers
- The Areas in hypothalamus involved in Sexual Desire and performance :-
  - medial proptic area (MPOA)
  - paraventricular nucleus (PVN)

- Clinical Points :

⊕ - The limbic System :

- Located in the limbus or the rim of Brain That Surrounds The Brain stem

- This Rim or Ring → formed of 2 parts :-

upper part
- preservation of species
- stimulation of Sexual Desire and behavior

Lower part
- preservation of self
- stimulation of Hunger sensation, and aggressive Behavior

⊛ The pheromones:
- close Relationship Between Olfactory and Sexual Function
- The animal genitals : secrete chemical subst. that attract the other sex By Olfaction
- These substances called "pheromones"
- the Role of phermones in Human is Still controversial

⊛ The amygdaloid nucleus :
- This nucleus Has :- Sexual inhibitory Action
- If injury to this nucleus → Hypersexuality
  ↳ Termed "Kluver-Bucy Syndrome"

2. The Regulatory External Factors

- The human motivations in general Regulated By Dual steering Mechanism :-
  ↳ Avoidance of pain
  ↳ Attainment of pleasure
- The sex Centers Have Neural and chemical Connections to Both → pain centers, pleasure Centers
- When we Have Sex :-
  the pleasure Centers in Brain → Activated. leading to → pleasurable sensations.
- The Conditions that associated è Pain ⇒ inhibition of sex Center.

• Endorphins :
chemical substances related to Morphine, produced By Brain cells to act on : neurones in the Pleasure Center
- The main action are :- to Produce pleasure and euphoria, Relive pain
- They are Responsible for pleasure During sex

3. the Regulatory internal Factors :-

- Include the Central neurotransmitters
- **2 Types** :-

Excitatory Central neurotransmitter

- **Dopamine** :-
  - Stimulation of Dopaminergic Center D_1 in the PVN of the hypothalamus
    - ↑↑ in sexual Desire
    - induction of **erection** in Low doses.
    - High Doses → stimulate Dopaminergic Receptors D_2 ⇒ **Ejaculation**
  - Helped By Relase of Oxytocin
- **Oxytocin** :-
  - injection of Oxytocin into the PVN lead to → **Erection**
  - maybe helped By: The action of Nitric Oxide.

⇒ clinical points :- The stimulatory effect of dopamine on sexual Behavior is the Basis for the use of apomorphine that stimulates Dopaminergic Receptors in ttt of ED.

Inhibitory Central neurotransmitter

- **Serotonin** :- is an inhibitory Central neurotransmitter
- **Noradrenaline** :- Stimulation of α-2 adrenoceptors in (MPOA) leads to ⇒ inhibition of desire and Eredion
  - Stimulation of α-1 → Stimulate the desire / erection
- **Opioids** :- endogenous opioids are inhibitory to Sexual activity

⇒ Clinical points :-

- The antihypertensive Clonidine → Erectile dysfunction as it stimulate the Central α-2 receptors
- **Yohimbine** :- used to ttt of ED as it Block these Receptors

II. Phsidogical Aspect :-

A- Sexual Response Cycle in **male** :- 4 phases
- Excitation - plataeu - Orgasm - Resolution
- During each phase → 4 changes
- 2 Genital Changes - External organs
  - Internal organs
- 2 Extragenital changes :-
  - Autonamic - Somatic

B- Sexual response Cycle in Female
- 4 phase :- - Excitation - plataeu - Orgasm
  - Resolution
- 4 changes During each phase
2 Genital changes - External - Internal
2 Extragenital changes - Autonamic . Somatic

(A) Sexual Response Cycle in Male :-

a Excitation phase :-

1- Genital changes

1- External Organs :-

- excitation phase occur in 10-30 sec of the initiation of sexual stimulation which Can be :-
  - * psychological → imagination, emotions
  - * physical → tactile stimulation During the fore play
- The Most important change During this phase

[Penile erection]

(A) Types of penile erection :

a- Sexual Erection :-

Psychogenic
- Result of :- psychogenic stimulation
- During :-
  - imagination
  - Sexual thoughts
  - Visual - auditory stimulation
- lead sto :- stimulation of Supraspinal Center
- activate Both
  - sympathatic
  - parasympathatic
- Erection

Reflexogenic
- Result of : Reflex stimulation of the penis
- Tactile stimulation of penis → initiate afferent impulses in the pudendal nerve
- To reach the parasympath spinal center
- Erection

b. Sleep (Nocturnal) Erection :-

- Occur spontaneously During sleep with Rapid eyemovement (REM) phase
- Mechanism:-
  - Reduced supraspinal inhibition of the spinal function During sleep.
- Spontaneous erections → may occur During Wakening period with absconce of any erotic stimuli OR fantasies
- its misleading terms:-
  - as it Not only Restricted tnight or Sleep
  - tumescence:- means only partial erection without Rigidity
  - nocturnal:- meaning During night while ereetion may occur During Day Sleep or even without sleep
  - most common mistake that Consider The waking from the sleep (morning erection) → Releated to fullness Bladder There is NO releation Between penile erection, and fullness of Bladder

(B) Components of penile Erection

2 components:

a- Tumescence :- ↑ in length and circumference of the penis as a result of :- ↑↑ Blood supply in it.

b- Rigidity :-

Rigidity of Corpora Cavernosa

- Rigidity Result from :- ↑ Blood Pressure of Cavernous spaces
- Radial Rigidity:
  Resistance of penis to Radial Compresion
- Axial Rigidity:
  Resistance of penis to Axial forces against the glans penis That prevent its Buckling (sudden collapse of the penis) By these axial forces

Rigidity of Glans penis and Corpus Spongiosum

- the Blood Pressure in glans and C.Spongiosum → half of That in Corpora Cavernosa.
- Because:
  - The glans Has No Tunica albuginea.
  - the glans is in Direct Connection with the dorsal vein So it act as A-V Fistula During erection
  - its Rigidity → less than That of Corpora Cavernosa.
  - Tunica albuginia of C.Spongiosum is thin → less Rigidity

Rigidity of Corpora Cavernosa

- Important points
- the Rigidity depend on :-
Thick Tunica albugnia formed of 2 layers
1- inner Circular layer
2- outer longitudinal layer
↓↓
These layers Help to ↑↑ intraCavernous pressure and ↑↑ penile Rigidity (By)
Their Resistance against-
The expanding Cavernous Tissue.
- These 2 layers Become one layer↓↓ :- Ventro-medial aspect of Corpora Cavernosa.

Rigidity of Glans penis and C. spongiosum

- The Dorsal vein → only Partially occluded During erection Between the Buck's area and The enlarged Corpora Cavernosa
↓
↑↑ pressure of the glans
- This is augmented By :-
↳ Contraction of Ischiocavernous
↳ and Bulbo Cavernous

- important points
the ↓↓ Rigidity of glans penis Help : to protect The Cervix During Sexual intercourse

- The extreme Caution followed During insertion of penile Prosthesis D.t → liability to injury this weak area of- Tunica and underlying Urethra.

(C) Central Control of penile Erection :-

- Neurological control of الجنس والكلام في sexual Desire

(D) Peripheral Control of penile Erection :-

a.) Molecular Aspects :

1- Cellular Mechanisms :-

1- penile erection depends on : Expansion of its Cavernous Tissue
2- This Expansion depends on :- Relaxation of the smooth muscle Cells in the trabeculae or the walls of the Cavernous spaces.
3- These Cells : about 45% of Cavernous Tissue Volume
4. The Smooth muscle Cells Contain 3 Types of filaments :-
↳ thin filaments of Actin
↳ intermediate filaments of Desmin
↳ Thick filaments of Myosin

5- Under Resting Conditions :-

- These Smooth M. Cells → in Contraction state
- The Blood in sinosoid → minimal
- penis → Flaccid.

6- This Contractile tone obtained as Follows :-

- Phosphorylation of Myosin By :- adenosine -5 , triphosphate (ATP)

⇓

Formation of attachments OR Cross Bridges Between Myosin and Actin ⟹ Form Contraction of smooth muscle cells.

7- This state of Contraction is maintained By :
- ATP
- High Concentration of intracellular free Calcium

8- Under Stimulated Conditions of Sexual exaitation ⟹

these Smooth muscle Cells Become in a state of Relaxation obtained as follows :-

→ Cyclic nuclestides
→ Cyclic adenosine monophosphate (cAMP)
→ Cyclic guanosine monophosphate (c GMP)

⇓

Leads to : ↓↓ concentration of intracellular free Calcium

By :- promoting its Binding to Ca binding protien

↳ smooth muscle cells → undergo Relaxation

9- mechanism of ↓↓ intracellular free Calcium ⟹

Depends on :-

Blockage of the Cellular channels of influx of Calcium into the cell ⟹ ↓↓ of its level inside Cell.

2- interCellular mechanism :-

1- The Coordination Between : the smooth muscle cells of the Cavenous Tissue to mediate Synchronized Contractions and Relaxations Depends upon :

- interCellular Communication that occur Through gap-Jun

2- These gap-Junction are :-

interCellular channels inBetween the membranes of the adjacent Cells That allows :- Calcium ions exchange Between the Cells

9-

3- These channels Formed of :-
Protiens (Conexins)

4- The Cavenous Tissue Contains Conexin 43

Clinical points

- The erectogenic Drugs may contain one of The following :-

1. Drugs That activate Adenyle Cyclase :- ↑cAMP
   - PGE1
   - vasoactive intestinal peptide (VIP)
   - Calcitonin gene releated Peptide (CGRP)
2. Drugs That activate Guanyl Cyclase :- ↑cGMP
   - nitric Oxide (NO) and its precursors → nitroglycorine, nitroprusside
   - linsidomine
3. Drugs That inhibit Phosphodiesterase :- ↑ cAMP
   - ↑cGMP → Sildenafil (Viagra)
   - papaverine

b.) physiological Aspects :-

1- Endothelial Factors :-

- Df :- substances released from the endothelium lining The penile arteries and the Cavernous tissue
- They include 3 Factors :-

↳ @ Endotheliam derived relaxing Factor (EDRF) :-
= nitric Oxide (NO)

- NO is synthesized from L.arginine → under The effect of nitric Oxide Syn thase (NOS) in the vascular endothelium
- This process depends on : Presconce of High intra Cavenous oxygen tension (pO_2)
  - pO_2 of 25 mmHg (as in venous Blood) ⇒ NO is inhibited (this occur in Flaceid penis)
  - pO_2 rise to 100 mmHg (this occar During Erection)

Duct :- ↑↑ arterial flow at the start of erection ⇒ Helpes more formation of NO

- NO ⇒ helps to Relaxation of Cavenous Smooth muscles Through Production of (cGMP) ⇒ penile erection

(b) Endothelins :-

- Endothelin-1 → Synthesized By the Penile Vascular endothelium
- Has :- Vasoconstrictor effect
- Responsiple For :- The Contractile tone of the Cavenous tissue in Flaccid penis
- opposite to NO
  ↳ High pO_2 → inhibit its Formation

(c) Prostaglandins :(PGE)

- Has Vasodilator effect
  ↳ maybe Due to • Stimulation of adenyl Cyclase enzyme
  • Formation of CAMP
  ⇒ This leads to :- Penile erection.
- PGI_2 ⇒ Has ⇒ Anti-platelets aggregating effects ⇒ That help prevents ⇒ Blood thrombosis Due to Blood stasis During erection.
- Similar To NO :-
  High (pO_2) → Stimulate its formation By : the enzyme :- Cyclo-oxygenase → which help :- Erection

(EDRF)(No) (PGE)(PGI) ⟹ are the endothelial factors in penile Erection
(endothelin) ⟹ in penile Flaccidity

2- Neurogenic Factors :- (neurotransmitters)

- D.F :- Substances That Released from Nerve endings at the penile arteries and Cavenous Tissue
- They include 3 Factors :-

(a) Cholinergic neurotransmitters :-

Acetylcholine ⇒ Released from :- Cholinergic nerve terminals
- as a Result of → Activation of the parasympathatic Sacral Center During :- Sexual Stimulation

← it helps relaxation of Cavenous Tissue • penile erection
By 2 mechanisms :-
(1st) → inhibition of Release of Noradrenaline
(2nd) → stimulation of Release of NO

→ (b) Adrenergic neurotransmitters :-
Noradrenaline → Released from :-
Adrenergic nerve terminals
- as a Result of :- activation of the Sympathatic Lumbar Center.
- it helps :- • Contraction of Cavenous tissue
• penile detumescence.
- Noradrenaline → Stimulate α-1 Receptor in the avernous tissue
→ α-2 receptors in the penile arteries → to produce VasoConstriction
→ B. Receptors in the Cavenous tissue → VasoDiltation
- The End Result is :- VasoConstriction

→ Vasodiltation Not the end ⇒ explained By :-
the ratio of α1 - & B receptors inside the Cavernous Tissue is 10 : 1
⇓
SO → The vasoconstriction and detumescence is predominance

→ (c) Non-adrenergic, non-cholinergic (NANC) neurotransmitters :-
NO and VIP ⇒ Released from :- the NANC (pepridergic) nerve Terminals During :-
Sexual Stimulation
- They help ⇒ Relaxation of the Cavenous tissue and penile erection through cGMP

(☆) in conclusion :-
• (NANC), (NO) (VIP) → are The Neurogenic factors (Acetylcholine) involved in penile erection
• adrenergic Neurotransmitters (Noradrienaline) → involved in penile Flaccidity
• (NO) Relased from Both → Vascular Endothelium
→ NANC nerve ending

C) Haemodynamic Aspects

1- Vascular phase :-

(*) Under Resting Conditions :-

- Penis is in flaccid phase
- Smooth muscles in Cavernous tissue tonically contracted By the Sympathatic Discharge ↓ allowing only a Small amount of arterial Blood For ⇒ Nutrions
- The Diameter of Cavernous arteries → 0.5 mm
- The Blood flow velocity = 15 cm/sec

(*) Under Stimulated Conditions of Sexual excitation :-

- There is Relase of
  - Endothelial factors from vascular Endothelium
  - neurotransmitter → from vascular nerve ending
- Both of them will lead to ⇒ Relaxation of Smooth muscle cells of Cavernous arties + tissues
- The Diameter of Cavernous arteries :- = 1mm
- The Blood flow velocity = 30 cm/sec.

→ Initial filling phase ⇒ penile tumescence
→ Full penile erection phase ⇒

1- Dilation of the arteries and Cavernous tissue ⇒ ↑↑ Blood flow and Blood volume
2- Compression of subtunical venous plexus ⇒ Between the enlarged Blood sinusoids and tunica albuginia
3- Compression of the emissary veins Between the 2 layers of tunica albuginea ⇒
- ↓↓ The venous Return to a minimum
- ↑↑ the intra Cavenous pressure to Reach above the Diastolic Pressure (tumescence phase) then to 90% of systolic pressure (full erection phase
4- As a Result of : ↑↑ Cavernous pressure ⇒ the Blood flow During the tumescence and full Reaction ⇒ decrease

2- Muscular phase : (Rigid erection)

- as a Result of: Dorsal nerve stimulation During Coitus
- There is contraction of: Ischiocavernous muscle ⇒ leads to → more venous Compression
  → more Rise in intracavenous pressure to several hundreds mm Hg.
  - During this phase:- No Blood inflow and The penis is a Completely closed space.
  - its Short Duration:- Due to:- Muscle fatigue
    Prevents → Ischemia.
    → Tissue Damage.
- The phase of erection Summarized as follows:-

0 → Flaccid phase	→ Minimum	→ Miniumum		
1 → Filling phase	→ Maximum	→ Miniumum		
2 → Tumescence phase	→ Decrease	→ Diastolic	Low	Pressure
3 → Full Reaction phase	→ Decrease	→ Systolic		
4 → Rigid erection phase	→ Miniumum	→ Maximum		

2- Internal Organs: (تكملة من)

- The testes → start show Enlargment Due to Congestion and elevation
  Due to → Contraction of the Cremasteric muscles

Extra Genital changes :-

Autonomic Changes

- There is Starting Rise in the Blood Pressure
- Heart Rate ;
- Respiratory Rate

Somatic Changes

- There is Semi-Spastic Contractions of-
  - Facial
  - Intercostal
  - abdominal muscles

b Plateau phase :-

Genital changes :-

1- External Organs :-

- This phase Continues for about (30 sec - 3 min)
- During which there is : Accentuation of the physiological Response that happened in the exaitation phase.
- The penile erection → Becomes more Rigid
- ↑↑ the size of The glans
- ↑↑ Diameter of penile shaft
- Scrotum → Smoothing of the skin and flattening

2- Internal Organs :-

- Accentuation of the Responses of the excitation Phase.
- The testes → more enlargment in volume By 50%.
  → elevation, Rotation
- Few drops of mucoid secretions of Cowper's gland

Extragenital changes:

- Accentuation of the changes That happened in the excitation phase as follow :-

Autonomic changes

- more ↑↑ in BP , HR RR
- Sex Flush in skin
  - Maculopapular Rash on abdomen → spread to chest, face, arms Thighs
  - more in Fair persons

Somatic changes

- Generalized Myotonia
- Semispactic Contractions of
  - Facial
  - intercostal
  - abd. muscles

ORGASM phase

- The person Reaches a Peak ⇒ where the Body → Suddenly Discharges it's accumulated sexual tension termed [orgasm]
- Last only → Few seconds
- it's the Shortest phase of the sexual Cycle.
- Orgasm :- Cerebral event of intense pleasure sensation that occur simultaneously with ejaculation.

Ejaculatory process

- Stimuli of Ejaculation :-

Central (Cerebral)

- Stimulation of some Cerebral Centers ⇒ Ejaculation without genital Stimulation
- in young male → ejaculation may occur By Fantasies only
- Fears, psychic Trauma ⇓ inhibit ejaculation
- The Cerebral Centers for ejaculation → very close to The Centers For erection

(Genital) peripheral

- Rhythmic Tactile stimulation of the glans and Shaft ⇓ essential for ejaculation
- This Stimulating effect may be
  - Facilited OR
  - inhibited

By The Cerebral Stimuli

Neuropathway of Ejaculation :-

Somatic pathway (Sensory + Motor)

- Afferent (sensory) impulse → Resulting From :- genital stimulation travel along The pudendal nerve → toward → Spinal cord Sigments ($S_{2,3,4}$)
- Efferent (motor) impulse travel from same spinal segments towards → Somatic peluic floor muscles + Perineal muscles.

Sympathetic pathway

- Efferent (motor) impulses travel from :- Spinal cord Segments ($T_{10,11,12}$ + $L_{1,2}$)
Through :- the hypogastric Plexus
toward :- the Unstriated muscles of the
  - prostate
  - seminal vesicles
  - vas deferens
  - Bladderneck.

Phases of Ejaculation :-

1 Emission :-

- The first phase of ejaculation.
- There is expulsion of Seminal fluid from the prostate, Seminal vesicles, vas deferens ⇒ into posterior Urethra.
- Concomitant Contraction of the internal sphincter ⇒ to close the Bladder neck to prevent Retrograde of the semen into the Bladder.
- this phase Can be Voluntarily Controlled Before it occurs.
- It depends on : Contractions of the Muscles of The prostate, Seminal Vesicles, Vas - The posterior Urethra -
- once it occurs and the Semen Reaches ⇓
The ejaculation Become → Inevitable

2 Ejaculation proper (antegrade)

- 2nd phase.
- there is Expulsion of the Seminal fluid from :- The posterior Urethra into :- Outside The penis

- This phase is → Inevitable.
  Not Voluntarily Controlled.
- It depends on :- Contractions of the Pelvic floor muscles +
  Ischiocavernous , bulbocavernous.
- These Contractions occur :-
  Rhythmically at 0.8 sec interval
- this phase Associatedè :-
  the intense pleasure of Orgasm
- and analogous to the Orgasmic phase in Female.
- The extragenital phases = plateau phase

d Resolution phase.

- The Duration of this phase = Variable
- if Orgasms occur ⇒ 10-15 minutes with sense of well-being

- if orgasms Dosn't occur ⇒ its about (10-15 hrs) with sense of :- exhaustion depression , peluic pain.
- Detumescence or loss of penile erection occur in 2 phases

First phase (Fast)
- as a Result of :- Orgasmic Contractions
  ↓
  that pump Blood out of the penis
  è Paitial Loss of erection

(slow) 2nd phase
- follow the 1st phase
- The genital Blood flow Return to Baseline. (Unaroused) patterns
- with Complete loss of erection

- The most impoitant and ch.ch features of the resolution phase in Males :- is :-
  The Refractory Period :- its the period of time after male Orgasm Duiing which further Sexual excitation or Orgasms are immpossible
  It may last :- From Few minutes = to few hrs or few days

- this Refractory period is ↑↑ in the following 2 conditions:

- Increase age of the individual
- Increase number of Repeated ejacalation within a period of time

Clinical points

(*) Orgasm without ejaculation :-

- may occur prepubertal in some Boys ↳ who experiance Orgasm During genital Stimulation But NO semen production

- Postpubertal :- in some men è Retrograde ejaculation Caused By:
  - DM
  - neurological Disease
  - Bladder neck disease

in all of these conditions → There is faliure of closure of the Bladder neck During Orgasm ⟹ The semen Returns in the retrograde Direction to The Bladder

- They experiance orgasm But- NO semen propulsion

(*) Ejaculation with out orgasm :-

- less common But may occur in Some Cases of neurological illness

(*) Orgasm without Refractory Period.

- occur in men with Micropenis D.t → androgen insinstivity
- they feel multiple Orgasms without refractory periods
- But these orgasms are not accompanied By ejaculation.
- This may explain The absence of Ref. period.

(*) Refractory period without orgasms:

[paradoxical refractory Period]

- occur in → men > 50 yr.
- explained By → Normally ; During the excitation phase → most men have The

ability to regain erection when these erections Become less Rigid. if the excitation is prolonged ⇒ so as Long as ejaculation Dosn't occur-

- men over 50 yr → may loss this ability to Regain their erection despite they didn't ejaculate.

(B) Sexual Response Cycle in Female

A Excitation phase:-

@ Genital Changes:-

1- External Organs:

- the excitation phase occur within 10-30 sec of the initiation of sexual stimulation. which may be • psychological • physical
- The Female Differe from the male in the Fact that they are stimulated more By:- The psychological Factors Rather than the physical factors (women may be Sexually Responsive to specific male while a man Can be able to Responsive to a wide range of sexually attractive females)
- the Basic physiological event is = Vasocongestion.
- the Clitoris undergos enlargment in The Diameter By 2 folds Rather than The Length.
- the Labia minora Become = Swollen with flattening and separation of the Labia majora.
- the Breast → enlargment in size Specially in women who didn't nurse with visible veins on skin.
- Nipple → erection → Due to Contraction of small muscle fibers

2- Internal Organs :-

- The first and the most important Sign of excitation in the Female is: apperance of- Vaginal transudate within 10-30 sec of sexual stimulation
- its produced By: Vasocongestion in the wall of the vagina ⇒ transudation of this clear mucoid fluid.
- Its main Function is to:- Facilitate the process of penile intromission without difficulty.
- this is Not a vaginal secretion → Because there are No secretory glands in the vagina.
- the secretion of the ~~Vaginal~~ Cervical glands and the Bartholin glands → Not important in Vaginal Lubrication.

(b) Extragenital changes :-

- = The same of that Male
- Sex flush → more common occur in 50-70%.

B Plateau phase :-

(a) Genital changes :-

1- External Organs :-

(*) the Clitoris ⇒ more Congestion, But its Retracted against the pubic Bone. This may give → False impression to the Husband of absence of excitement ⇒ Not True

- this Retraction helps to ⇒ Protect the Very Senstive Clitoris from Direct Stimulation.
- the Clitoris undergo indirect stimulation (By)- being pressed upon as a part of the Vulva By the pubic Bone of Husband or (By) traction on it By the clitoral hood (the fused upper part of the labia minora)

C ORGASm phase :-

- Introduction -

(a) Genital Changes :-

- Physiologically :- The orgasm in female ch.ch By (5-15) rhythmic contractions at 0.8 second intervals. of the perineal, uterine, vaginal, muscles
- Subjectively :- The orgasm described as follows :-

1- the orgasm has its onset with suspension of a momentary Cessation of the Consciousness -
- This is followed immediatly By :- intense sensual awarness of the Clitoris → that radiates upward into the pelvis associated e` a sense of bearing Down or expelling

2- Then there is a sensation of warmth moving from the pelvis to the whole Body.

3- there may be a sensation of ~~warmth~~ muscle Contractions felt in the vagina and pelvis.
"pelvic throbbing"
- It may be associated e` involuntary Vocalization desire of closeness or after-play.

(b) Extragenital Changes :- = male

D Resolution phase :-

- ch.ch By :- Reversal of all the genital and extragenital changes that occur in previous phases
- the most important ch.ch feature :- the absconce of Refractory peiod.
(The female has the Capacity for multiorgasms without any Refractory peiods inBetween as Long as there is Stimulation)

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- The most imporitant ch.ch feature :-
The absconce of Refractory period.
(The female has the capacity for multiorgasms without any Refractory periods inBetween as Long as there is Stimulation)

Effect of Aging on the Sexual Response Cycle:-

male

- excitation phase:- more prolonged and The male need more Direct genital stimulation for erection to occur
- mild ↓↓ in Rigidity of erection
- The plateau phase: Shortned D.t lesser intensity
  D.t ↓↓ ejaculate volume
- The Resolution phase: Prolongation of Ref. Period → upto Days or weeks

Female

- Excitation phase: + Plateau phase:- less vaginal lubrication
  ⇓
  Painful intercourse (Dyspareunia)
- this pain accentuated By the Atrophic mucosal change: ↓↓ + expansion of the vagina.
- Breast size-flush:- Reduced or absent
- Orgasm phase:- associated ē pain

Male vs Female Orgasm:-

male	female
- physical factors more important	- Psychological factors more important
- male ē Refractory period.	- multiorgasmic - No Refractory period.

Clitoral vs Vaginal Orgasms:-

- False Concept:- the female depend on clitoral stimulation in Reaching the orgasm During their psychosexual Development and when they are "mature" they depend on vaginal stimulation for their orgasms
  - If the women need clitoral stimulation So They are immature
- other reports:- Classify the orgasm into
  ⊛ vulval orgasm ⊛ uterine orgasm ⊛ blended orgasm
- The Basic Rule:- The Clitoral Stimulation is an essential event in most of Healthy mature females to Reach orgasm

- the role of (G-Spot) in female orgasm:
  - Grafenberg → The first one Identify a spot in the anterior vaginal wall with special erotic Senstivity
  - this concept couldn't be proved

- Female Sex Flush - Sex Skin:
  - sex flush → Represent the Colour Changes of the skin of the Breast and abdomen During the excitation and plateau phase
  - Sex Skin → Represent the colour changes of the skin of labia minora During the plataue phase just Before the orgasm.

- Female Erection and Ejaculation:
  - Erection: occur in the nipple, clitoris During excitation phase
  - internal Erection: The Congestion and the expansion of the vagina.
  - Ejaculation: Semen-like fluid that Comes From the urethra During Orgasm and said that it come from "Female prostate" which is rudimentary Skene's gland around Urethra.
    - all these Concept Not proved.
    - most of these female that show this phenomenon have urinary Stree incontinence occur During Straining or sexual arousal Rather than True ejaculation

III Behavioural Aspect :-

- non-Coital activity ⇒ the sexual activity Between the partners apart from sexual intercourse.
  (misleading name ⇒ foreplay, after-play.

(A) Non-Coital Activities:

(a) Touching :-

- important way of Communication Between male-female ⇒ expressing The need of Love-Sex.
- important factor in Sexual Pleasure and giving sensation of being Loved, intimate, wanted
- Touching include :-
  Hand - Body - Cuddling - kissing

(b) Genital Touching :-

(*) Basic Rules :- The genital area in Both female-male ⇒ Highly Senstive to touch

- Simplified in 3 heading :- Variation, Lubrication, demonstration

Variation
- from sex to other
- from person to other
- same person at different Times

Lubrication
- The tissue of The Valva, Vagina
  Penis ⇓
  Irritated - painfull without sufficent lubrication
- Some lubricants Can Cause ⇒ genital Dermatitis
- most of them are Spermicidal ⇓ Cause infertility

"Hands-on" Demonstration
- Simplest - Accurate way to knowing the ideal method of genital stimulation By the other parent
- The person place a Hand on top of other Partner's Hand ⇓ To Direct him to the ~~methods~~ Sites and The methods of genital Stimulation That give more satisfaction

(4) Practical points :-

Female genital Stimulation

- most female enjoy Firm, sustained rubbing of the Shaft of clitoris Directly or indirect Stimulation By :-
  Caressing the vaginal lips, mons, Perineum
- Tip of the clitoris Better Not to Rubb Because its over Senstive → Uncomfortable + irritating During Touch Specially :- Early stages without sufficent Lubricants

male genital Stimulation

- when penis is Flaccid
  ↳ most male prefer :-
  - light Stroking OR - Caressing of The penis.
- Vigorous Stimaltion at this stage ⇒ uncomfortable Cause Performance anxiety. Due to :- lack of Rapid erectile Response
- when penis Become erect ⇒ Prefer firm Stimulation with up + Down movement of The Hand around shaft

(C) Oral - Genital Contact :-

Oral stimulation of Female Genitalia [Cunnilingus] = lick

- most females Highly aroused By :-
  Cunnilingus
- Can Reach Orgasm.
- No Harmful effect

Oral stimulation of male Genitalia [Fellatio] = Fellation

- Highly arousing for males
- No medical Risk.
- Orogenital Contact is a Hygienic as Mouth-to mouth kissing
- The natural genital secretion are clean.
- Its an :- intimate + close Releationship

(B) Coital Activities :-

- The Duration of intercourse → 5 - 20 mints according to :- Age - Race, physical fitness Drug therapy, Relation Between partners

- mean Frequency of intercourse in American married couples :-
  4.8/week.
  Decline to 1.8/week in 50s
  1.3/week → in 60s
- Higher among Africans than Americans

(a) Male Superior position :-

- The Commenst . classic position with the female is lying on her Back " Missionary position"
- The main advantage of this Position is to gives the Best Chance of Conception → Since the Semen pools in a position in the vagina closest to The mouth of the Cervix Specially when the women wraps her legs around the Back of her Partners → Deeper penetration inside the vagina.
- Disadvantage of this Situation →
- Female discomfort from the weight of the male
- Difficult of manual stimulation of the clitoris as the hands of the male Supporting his Body.

(b) Female Superior Positions :-

- female may sit or lie against her paitners.
- Its more common in :- Highly educated Couples that accept it
- The advantages :-
  For female → her ability to control her ~~paitner~~ Pelvic movements for MAX clitoral stimulation that helped By :- male who has his Hands Free → for additional stimulation of her Body and Genitalia
- Suitable for :-
- Female with orgasmic Dysfunction.
- female in late pregnancy.
- the Advantages for male :-
  - Suitable for male who have premature ejacult as he has more ejaculatory Control in this Position.

- the Disadvantage:-
the psychological discomfort from Some men who believe that the man should be superior to women

ⓒ Side to Side position :-

- the paitners are Facing each other By lying on their Sides.
- The Advantages :- Both paitners are Relaxed with free Hands for more Stimulation During intercouse.
- The Disaduantage:-
- Difficult penile intromission in This position
- less free penile thrusting movement

ⓓ Rear Entry Position :-

- the man faces the women's Back and the penis is placed into the vagina from Behined.
- The women may lie on her face or side.
- The Aduantage :-
- the additional manual Stimulation for the Breasts or the clitoris
- Suitable for women During late pregnancy.
- The Disaduantage :-
Lack of eye contact

Aim of Discussion :- of the motivational/ Physiological and Behavioral aspects of sex. to Study normal sexual function as an essential and preliminary step for the study of the diagnosis and the ttt of different sexual dysfunction
- Should know that sex → is an intimate Relationship Rather than a mechanical act